

REMARKS/ARGUMENTS

Applicant responds herein to the Office Action dated September 8, 2005.

Preliminary, as requested at the bottom of page 2 of the Office Action, applicant affirms the election of the claims set forth in the Office Action.

Further, responsive to the objection to the drawings, Figs. 17, 18 and 19A-19C have been amended to include the legend "Prior Art" is enclosed.

Still further, the objection to claims 1-6, specifically claim 1, lines 6-8 and claim 3, lines 3-4, under the second paragraph of 35 U.S.C. §112 has been noted. Applicant has further noted the objection to various portions of the claim language as set forth at page 4 of the Office Action. It is believed and respectfully submitted that the amendments to the claims herein fully address each and every one of the stated grounds of rejection and the Examiner is accordingly requested to reconsider and withdraw the subject rejections.

Purely for the purposes of assisting the examination, the Examiner's kind attention is directed to Figs. 9A and 9B, Figs. 10A and 10B and Figs. 11A and 11B. These figures variously illustrate by way of exemplary embodiments, a structure that maintains the sum of the volumes of the first and second chambers to remain constant based on the recitation that when the volume of the first chamber decreases, the decreased volume of the first chamber is equal to an increased volume of the second chamber and vice versa. This is accomplished in accordance with a preferred embodiment by the sidewall of the pressure chamber and the partition member following each other, or the structure of the sidewall of the pressure chamber changing in shape, or the structure of the partition member changing in shape, as described in the specification. However, the instant claims are not limited to the preferred embodiments described in the specification.

Substantively, claims 1-5 stand rejected on grounds of obviousness over Yu, et. al. (6,071,094) and claim 6 is rejected on grounds of obviousness over the aforementioned Yu, et. al. reference, in further view of Akimoto (6,126,338). Reconsideration is requested in view of the amendments to the claims herein and the following remarks.

Insofar as the rejection on prior art is concerned, it should be observed that even prior to the instant amendments, the original claims set forth that "the chemical solution sucked and introduced into the first chamber is moved via the acting member provided outside the pressure chamber into

the second chamber", thereby adequately reciting and specifying the movement of the chemical solution from the first chamber to the second chamber via a path located outside the pressure chamber.

In the cited primary Yu, et. al. reference, on the other hand, the chemical solution is moved to the second chamber through two paths. Specifically, the chemical solution is not conducted "via the outside of the pressure chamber" when that path utilizes and proceeds via "the central diaphragm 35". Similarly, in the cited reference, the path does not "move from the first chamber" when the path utilizes the pipeline L2. Accordingly, the instant claims are clearly distinguishable over the prior art.

In any event, the instant claims have been amended to explicitly include "a pipe serving as a flow passage of said chemical solution". In the specification, an example is provided of a pipe 211 which serves as a passing channel for the flow of the chemical solution introduced from the first chamber to the second chamber which even more explicitly defines the invention over the prior art.

In the cited Yu, et. al. reference, the filter 28 (i.e., the acting element) is provided on the pipeline L3 heading from the bellows 32 (second chamber) to the nozzle 29, which is clearly different from the corresponding structure of the present invention. As such, the prior art structure relied on in the Office Action describes no more than the example illustrated in the prior art Fig. 17 of the present invention. The problems associated with such a prior art structures are already explained in the Description of the Background Art section of the instant specification.

Further, Yu, et. al. fails to disclose the concept of disposing the acting element between the first and second chambers.

A further feature of the present invention resides in the structure that causes the chemical solution to move from the first chamber to second chamber via the acting element, and the introduction of the chemical solution having been acted upon by the acting element into the second chamber.

When providing "a central diaphragm 35 (passing flow from the first chamber to the second chamber)" inside the pressure chamber, as in the cited reference, the filter 28 needs to be disposed therein to cause the acting element to act upon the chemical solution moving from the first chamber to the second chamber, which is structurally difficult to provide. Even if the filter 28 is disposed in "the central diaphragm 35", it is still extremely difficult to carry out maintenance thereof.

For all of the foregoing reasons, claim 1 clearly distinguishes over the prior art.

Turning to claim 4, it is initially observed that the pipe has been recited as a positive element of the apparatus, rather than merely being mentioned in the preamble.

In response to the Examiner's assertion that "it is unclear how these elements (the switching element and the opening and closing element) function as claimed without some type of controller being recited to effect said modes", the kind attention of the Examiner is directed to the description at page 33, line 25 to page 34, line 1 of the instant specification, where it is described that "a controller CR is principally equivalent to switching element". Thus, while "a switching element" is recited functionally and descriptively in the claims, a "switching controller" which corresponds to the claim language is described by an exemplary structure in the present specification. Accordingly, the phrase "a switching element" does not exclude a "controller", whereby the applicant respectfully traverses the assertion that a specific controller must be recited and that, indeed, no controller is recited. In other words, the applicant respectfully submits that the specific term "controller" need not be recited in the instant claims, as it is implicit in the structure that is, in fact, already recited therein.

In the final analysis, Yu, et. al. fails to describe the technique of switching between a maintenance mode and a normal mode, and therefore cannot be stated to either anticipate or render obvious claim 4.

The remarks given above relative to claims 1 and 2 are also applicable to claims 5 and 6.

Relative to claim 10, it is noted that the claim explicitly recites that the partition member prevents passage of the chemical solution between the first and second chamber inside the pressure chamber. In contrast, passage for the chemical solution in Yu, et. al. does not prevent the functionality described above, and certainly its provision of a "central diaphragm 35" does not provide that function or the structure for effecting that function.

Relative to newly added claim 11, it is noted that it provides that each of the first and second chambers is provided with only one sucking opening. In Yu, two sucking openings are provided in the bellows 32 corresponding to second chamber (a sucking opening communicating with the pipeline L2 and the central diaphragm 35).

For the record, sucking a chemical solution with two sucking openings presents the following problem. Specifically, when the chemical solution flows into the bellows 32 from two directions, as illustrated in Fig. 3C of the cited Yu, et. al. reference, the flow of the chemical solution becomes disorderly inside the bellows 32, causing uneven amplification.

Further relevant to the instant communication is the need to understand relative to a chemical solution flowing from the pipeline L2 (Fig. 3C), that upon movement of the partition 34 to the left, pressure is applied inside the bellows 31. This pressure causes the chemical solution inside the bellows 31 to flow backward toward the pipeline L31, as indicated by the arrows inside the bellows 31 in Fig. 3C. The backflow occurs because, unlike the check valves 26 and 27, the throttle 25 or the pipeline L1 has no check valve, as can be clearly seen from Fig. 2. That is, in Yu, et. al., the chemical solution having the same volume as the chemical solution flowing from the pipeline L2 flows backwards toward the pipeline L1.

In the environment of the present invention, the chemical solution should be managed to flow smoothly in a fixed direction to the greatest extent practical, in order to prevent the chemical solution from staying in the bellows 31 due to the backflow, which would otherwise deprive the freshness of the chemical solution and result in its degradation, such as by causing gel formation.

For all of the reasons set forth above, it is respectfully submitted that all of the claims in the application are clearly distinguishable over the prior art, including all of the independent claims, and certainly the claims dependent thereon.

Accordingly, the Examiner is respectfully requested to reconsider the application, allow the claims as amended and pass this case to issue.

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on December 8, 2005:

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Name of applicant, assignee or
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AMENDMENT TO THE DRAWINGS

Figs. 17, 18 and 19A-19C have been amended. The attached sheets of formal drawings replace the original sheets including Figs. 17, 18 and 19A-19C.